FS-PSW-4101
Silviculture of California Conifer Types
Study R-861

March 20, 1987

Final Report for Funding

RESPONSE OF TRUE FIR SAPLINGS TO BRUSH REMOVAL

LATOUR DEMONSTRATION STATE FOREST

A Cooperative Study between

The Pacific Southwest Forest and Range Experiment Station

and

The California Department of Forestry

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Progress To Date - The study plots were installed, measured (Tables 1, 2, and 3; fig. 1), and treated in summer and fall 1985 according to plan. Measurement plot boundaries were painted in blue and corners monumented with blue-painted rebar. Brush measurement transects were monumented along the measurement plot boundaries, also. Because some brush plants were cut and trampled while tree thinning, the brush in plots where it was to remain was remeasured in the summer of 1986, again according to plan (Table 4).

Table 1.--Tree and stand characteristics on plots before thinning. Response of true fir saplings to brush removal. Latour Demonstration State Forest.

Plot no.	Brush killed	Red fir		White fir		Total trees
		Trees	Mean d.b.h.	Trees	Mean d.b.h.	
		number	inches	number	inches	number
1	no	53	3.6	83	2.4	141
2	no	51	3.0	71	2.8	122
4	no	29	4.9	22	2.6	53
3	yes	59	3.1	4	3.4	64
5	yes	37	2.4	66	2.1	103
6	yes	45	2.6	0	-	45

Table 2.--Shrub characteristics on plots before treatment. Response of true fir saplings to brush removal. Latour Demonstration State Forest.

Plot no.	Brush killed	Total crown cover	Mean height	Species[1/] proportions by crown cover			
				CASE	ARPA	CEVE	PREM
		percent	feet	percent			
1	no	62	2.2	76	20	4	0
2	no	60	1.8	88	8	4	0
4	no	58	1.7	87	4	9	0
3	yes	50	1.8	80	10	10	0
5	yes	70	2.4	75	25	0	0
6	yes	82	2.2	85	12	0	3

[1/] Species codes are: CASE - Castanopsis sempervirens; ARPA - Arctostaphylos patula; CEVE - Ceanothus velutinus; PREM - Prunus emarginata

Table 3a—White fir and red fir tree and stand characteristics after thinning.

Response of True Fir Saplings to Brush Removal—Latour Demonstration State Forest

Plot no.	Brush killed	Trees		D.b.h.		Basal area		Total height		Live crown ratio		Height growth last 5-years		Internodal branches	
		WF	RF	WF	RF	WF	RF	WF	RF	WF	RF	WF	RF	WF	RF
		—no./ac—		—inches—		—ft^2/ac—		——feet——		—percent—		——feet——		——no.——	
1	No	140	380	3.14	3.37	7.5	23.5	13.4	15.8	57	61	3.1	3.9	3.3	3.8
2	No	220	320	1.57	2.78	3.0	13.5	7.8	11.5	58	62	1.7	2.8	1.6	2.4
4	No	120	480	2.96	2.61	5.7	17.8	11.3	11.9	57	61	2.5	2.8	1.8	2.7
3	Yes	100	460	1.96	2.42	2.1	14.7	8.4	11.1	61	62	1.9	2.5	2.0	2.6
5	Yes	280	260	2.31	2.18	8.1	6.8	10.1	9.1	64	57	2.5	2.4	3.7	2.5
6	Yes	260	320	1.71	1.99	4.2	6.9	7.6	9.5	64	70	1.8	2.6	1.8	3.2

Table 3b—Tree and stand characteristics of both species after thinning.

Response of True Fir Saplings to Brush Removal—Latour Demonstration State Forest

Plot no.	Brush killed	Trees	D.b.h.	Basal area	Total height	Live crown ratio	Height growth last 5-years	Internodal branches
		no./ac	inches	—ft^2/ac—	——feet——	—percent—	——feet——	——no.——
1	No	520	3.31	31.0	15.2	60	3.7	3.7
2	No	540	2.36	16.5	10.0	61	2.3	2.1
4	No	600	2.68	23.5	11.8	60	2.8	2.5
3	Yes	560	2.35	16.8	10.6	62	2.4	2.5
5	Yes	540	2.25	14.9	9.6	61	2.4	3.1
6	Yes	580	1.87	11.1	8.6	68	2.2	2.6

Table 4.--Shrub characteristics on plots with brush after thinning. Response of true fir saplings to brush removal. Latour Demonstration State Forest.

Plot no.	Total crown cover	Mean height	Species proportions by crown cover CASI	ARPA	CEVE
	percent	feet	percent		
1	38	1.9	100	0	0
2	62	2.9	88	8	4
4	45	2.2	94	4	0

Planned Work - An inspection of the herbicide application in August 1986, one year after treatment, indicated that almost all of the brush plants were dead. A follow-up herbicide application had been planned for fall of 1986. This was delayed until all regrowth would be readily visible and of a size sufficient to hold a lethal dosage of herbicide, probably in fall 1987.

During the August 1986 inspection a marked response to brush killing was observed. Current year needles were as much as 50 percent longer on many trees in plots where brush was killed. This immediate foliar response probably indicates an immediate increase in diameter growth. We plan to document this and other treatment responses, if they exist, in a planned remeasurement of all trees in fall 1987. No changes in the study plan are anticipated for subsequent measurements, analyses, and reports and manuscripts.

Figure 1.---Location of Study P861. Response of Pacific fir saplings to brush removal. Latour Demonstration State Forest. Shasta County, California. NE 1/4 of NW1/4, Section 17, T. 32 N., R. 3 E. M.D.M.